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THE PLANT DISEASE BULLETIN

Issued By

The Plant Disease Survey

VOLUME II. *NUMBER 6.*

July 15, 1918.

BUREAU OF PLANT INDUSTRY

UNITED STATES DEPARTMENT OF AGRICULTURE

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List of Food Products Inspectors of the Bureau of Markets, U. S. D. A., as of July 1, 1918. Abstracts from the reports of many of these men are appearing from time to time in the Plant Disease Bulletin.

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U. S. Bureau of Markets.

CEREAL NUMBER AUGUST 1

It is expected that the next number of the Plant Disease Bulletin will be a cereal number in which cereal diseases will be given especial attention. Please send in any notes you may have at once so that they may be included.

CREDIT FOR REPORTS DUE COLLABORATORS

Attention is called to the fact that the reports for various states are furnished by state collaborators unless it is otherwise indicated in connection with the note itself. The most recent list of names of chief collaborators is given in the June 1 number of this Bulletin. A list including assistant collaborators will appear in the next issue.

APPLE

Fire Blight caused by Bacillus amylovorus.

Colorado: This is the only disease that is common to date. Infection generally less than last year. The spring has been hot and dry.

Delaware: (May 20) Very slight, not nearly so severe as during the past three years.

Kansas: Blight fairly common, has been reported four times.

Massachusetts: Prevalent through the state, especially blossom and twig infection. It has not, however, caused severe injury.

Minnesota: Cankers reported from a number of places, beginning in March. A wet period in late May initiated some twig infection. A dry period late in June largely checked progress.

Nebraska: Blight and canker appear to have been unusually severe throughout the state this year, as is evidenced by reports from a number of counties. The injury in some places is said to be very severe.

New York: (Reported by F. M. Blodgett.) Fire blight has appeared in isolated localities, especially on Alexander and Twenty Ounce.

Niagara, Monroe and Erie Counties: (Reported by J. W. Roberts, June 8.) Practically no blight to be seen in this section at this time.

Ohio: A rather general outbreak noted on summer apples especially, mostly twig infection apparently resulting from the presence of tissue penetrating insects. The losses are not believed to be excessive.

Tennessee: Twig blight has done much damage.

Virginia: Severe locally but probably not so general over state as commonly.

Washington: Quite severe and destructive, especially in irrigated sections in central Washington. No figures on amount of loss.

Scab caused by Venturia inaequalis.

Minnesota: Not yet serious. First reported from Wright County, June 14.

Nebraska: Scab thus far this year has not been serious. Lack of rain largely prevented primary infection.

New Mexico: Very small percent; only a few reports in the state.

New York: (Reported by C. Chupp and F. M. Blodgett, July 1.) Disease later in appearing than usual on account of unfavorable weather conditions, consequently there was no large amount of blossom infection. Only six counties

out of twenty from which reports have been received indicate any loss by pedicel infections, these counties are Cayuga, Genesee, Monroe, Orleans, Otsego and Wyoming. At the present time the disease is common and while plentiful in some places, especially in unsprayed orchards, the crop generally averages very free from scab.

(Reported by J. W. Roberts, June 8.) Niagara, Monroe and Erie Counties. Beginning to appear on leaves of unsprayed trees but few infections are showing as yet on fruits.

Ohio: Apparently quite general upon susceptible varieties, noted on leaves of Rome Beauty, Grimes and some others. It is possible that the injuries are local rather than general.

Pennsylvania: General infection on leaves and fruit of Stayman throughout the state where no spraying was done. Winter Banana also badly scabbed. Slight on Ben Davis, none observed on York Imperial. First report May 20, on leaves from Monroe County.

Tennessee: Common and doing much damage.

Virginia: Unusually prevalent and the most destructive disease to date.

Washington: Very little in the state this year, probably due to the season.

West Virginia: Scab is quite severe in the Ohio and Kanawha Valleys.

Cedar Rust caused by Gymnosporangium Juniperi-virginianae.

Massachusetts: Reported from many places.

Minnesota: No serious injury found. First report June 10 from Fillmore County.

Nebraska: In general the disease has been very severe this year. A movement is on foot to destroy all red cedars in the apple region of southeastern Nebraska.

Ohio: Limited reports have been received showing transmission from red cedar.

Pennsylvania: General but slight infection on Winesap, Ben Davis, Baldwin, and York Imperial in Franklin County. First observed May 30 on fruit and foliage.

Virginia: Destructive locally.

West Virginia: Apple rust is less severe than has ever been noted since 1909.

Winter Injury.

Kansas: Very common this year, especially on trees grown in the valleys.

Massachusetts: Extensive and severe in the apple orchards in the northern part of the state, some entire orchards were ruined.

Minnesota: Serious everywhere in the state.

New Hampshire: Severe winter injury in places.

New York: Winter injury severe in many places. Hubbardston especially susceptible. Many Baldwins have suffered.

Ohio: Serious killing through severe freezing in undrained locations or insufficiently aerated soils. Crotch injury reported very frequently on inside of upright crotches, younger trees indicating accumulations of soft snow and subsequent hard freezings.

Pennsylvania: Prevalent throughout northern half of state on Baldwin. Lower limbs especially affected. In every case where injury was severe the trees bore heavy crop last season. No other varieties similarly affected.

Vermont: "Very severe on certain varieties. Baldwins are almost half ruined and even Greenings were injured. I should put the severe injury at about 15-20% of the total trees in the good orchards." -- B.F.L.

Washington: Very prevalent in all parts of the state. This is responsible for much loss of foliage and in cases of the whole tree. This condition may be aggravated by drought in some cases. Reported more often than any other disease.

Powdery Mildew caused by Podosphaera leucotricha.

New Mexico: Reported from Lincoln and Otero Counties. Quite common in mountain districts. Loss not great.

Washington: Very prevalent in irrigated section of central and western Washington. This is one of the most serious diseases in these regions.

(Reported by D. F. Fisher.) Damage mostly due to reduction in vitality of tree and prevention of fruit bud formation. It is therefore difficult to estimate it at this time. Infection is very general and serious in some sections of all irrigated districts and present to some extent in nearly every orchard. Mildew russets the fruit, causing a loss of grade and there will be heavy loss this year in many orchards on this account. Spraying was generally started too late for the best results. In the Yakima Valley atomic sulphur and iron sulphide have been generally used but in the Wenatchee Valley lime sulphur has been preferred. None of the sulphur sprays which are most effective against mildew can be used after hot weather starts in these regions of intense sunlight, severe fruit burning always resulting.

Other Diseases.

Kansas: "Young orchards in Doniphan County, the main fruit-growing region in the state, are threatened with severe injury by a comparatively new canker

disease which is being investigated at this station at the present time." L.E.M.

BEAN

Anthracnose caused by Colletotrichum lindemuthianum.

Mississippi: (Market inspection at Boston and Chicago, 2 cars.) Infection in one car varied from 1 to 10% of contents of three-fourths of hampers; in the other car an occasional hamper contained badly spotted stock.

New Hampshire: Disease very rare, dry weather having generally prevailed.

New York: Not so prevalent as last year and much less than in 1916. First reported from Oneida County June 15. There has been just enough rain for a good growth of the crop, nowhere has it been excessive.

Tennessee: Disease just making its appearance on snap beans, the pods are attacked. Reported from eastern Tennessee.

Vermont: No anthracnose reported as yet, the cold weather has apparently prevented it in spite of the rain.

Virginia: Locally more destructive than last year and probably more throughout the state. First reported June 28 from Blacksburg. Infection at this time is chiefly on stems and leaves, and pod spot is just appearing. Excessive rainfall has contributed to the infection.

Bacterial Blight caused by Bacterium phaseoli.

Florida: (Market inspection at Pittsburgh, part of car.) Two percent infection scattered throughout car.

Georgia: (Market inspection at Pittsburgh, 1 car.) One-fourth of hampers showed 10% of beans affected.

Louisiana: (Market inspection at Pittsburgh and Kansas City, 4 cars.) Infection ranged from a few beans affected in all hampers to 90%, an occasional hamper worthless.

Minnesota: First found June 11. Reported as doing considerable damage in Ramsey and Hennepin Counties. The seedlings are injured.

Mississippi: (Market inspection at Kansas City and Pittsburgh, 3 cars.) Infection slight in most hampers of one car, affecting appearance only; 2% infection noted in the other two cars.

New Mexico: A few isolated cases reported from Dona Ana County; very severe in a few cases.

New York: Very few reports have come in thus far.

Tennessee: Navy beans planted early on the Experiment Station farm showed considerable bacterial blight. First observed June 10. The disease is generally common. The injury has been large in some fields.

Vermont: "Last year very abundant at this time but have seen only one doubtful case thus far." -- B.F.L.

Virginia: Not so prevalent as anthracnose but rather common. First appearance June 20. Infection chiefly on leaves and stems.

Rot caused by Sclerotinia libertiana.

Louisiana: (Market inspection at Kansas City, 2 cars.) One car with a few beans badly decayed from watery soft rot, the other car with an occasional hamper entirely decayed.

Mississippi: (Market inspection at Kansas City, 1 car.) An occasional pod partially decayed by Sclerotinia found in top layer of all hampers and in center of load.

Gray Mold caused by Botrytis cinerea.

Mississippi: (Market inspection at Boston, 1 car.) In one-tenth of hampers gray mold was noted on 5% of contents.

CABBAGE

Soft Rot probably caused by Bacillus carotovorus.

Alabama: (Market inspection at Pittsburgh, 1 car.) This decay was noted mostly in areas affecting one-fourth of head and extending to depth of 3 to 5 leaves. It is estimated that one-fourth of weight would be lost in trimming.

Florida: (Market inspection at Jacksonville and Pittsburgh, 1 car and 8 barrels.) All of stock in barrels worthless. All heads in top tier of car affected to depth of 4 to 7 outer leaves; 25% of heads in lower tiers affected to the same extent.

Mississippi: (Market inspection at Chicago and Kansas City, 4 cars.) Two cars inspected at Chicago showed complete decay of 5 and 8% of stock, with an additional 25 and 30% of stock showing decay in 4 to 8 outer leaves. Eight percent decay on 2 to 4 leaves noted in one car. Decay slight on outer leaves of cabbage in car inspected at Kansas City.

Tennessee: (Market inspection at Chicago, 1 car.) Ten percent of stock with spots of slimy decay on outer 2 to 4 leaves.

Black Mold caused by Alternaria brassicae.

Florida: (Market inspection at Pittsburgh, 3 cars.) All of heads in two cars with 2 or 3 outer leaves affected with spots of black mold; 10% of contents of 1 car similarly affected.

Louisiana: (Market inspection at Chicago, 1 car.) Crates at one end of car showing complete decay from black mold.

CARROT

Rot caused by Sclerotinia libertiana.

Louisiana: (Market inspection at Chicago, part of car.) Sixteen percent of stock completely decayed.

Mississippi: (Market inspection at Detroit, 364 hampers.) Most hampers badly decayed, both roots and tops.

Black Mold caused by Rhizopus sp.

Louisiana: (Market inspection at Chicago, part of car.) Twelve percent of stock affected by black mold.

CUCUMBER

Rot caused by Sclerotinia libertiana.

Illinois: (Market inspection at Chicago, 1 car.) Infection 9%.

South Carolina: (Market inspection at New York, 1 car.) Infection ranged from 30 to 90%.

Texas: (Market inspection at Omaha, 1 car.) Occasional cucumber badly decayed, the small cucumbers showing heaviest decay.

Soft Rot (Bacterial)

Florida: (Market inspection at Pittsburgh, part of car.) An occasional cucumber decayed.

Pennsylvania: (Market inspection at Pittsburgh, 2 cars.) Decay noted on all stock in both cars, ranging from numerous spots on a cucumber to complete decay.

South Carolina: (Market inspection at Baltimore, New York and Pittsburgh, 5 cars.) Bacterial soft rot varied in the 5 cars from numerous spots on some fruit to 4 to 90% complete decay, average complete decay 22%.

EGGPLANT

Fruit Rot caused by Phomopsis vexans.

Florida: (Market inspection at Philadelphia, 1 car.) Sixteen percent of contents of car showing this decay, from half to entire eggplant being affected.

LETTUCE

Soft Rot probably caused by Bacillus carotovorus.

Alabama: (Market inspection at Pittsburgh, 1 car.) Decay in outer one-fourth of leaves on 10% of stock; 90% showing slimy decayed spots throughout heads.

New York: (Market inspection at Pittsburgh, 1 car.) Sixty percent of heads showing slimy decay of outer one-fourth of leaves; one-third of heads decayed in spots to center.

Tip Burn (Physiological).

California: (Market inspection at Chicago, 1 car.) Tip Burn noted on 4 to 8 leaves of 25% of heads.

MELON (HONEY-DEW)

Anthracnose caused by Colletotrichum lagenarium.

Georgia: (Market inspection at Chicago, 1 car.) Forty percent of melons showing anthracnose covering from a small area to half the surface of affected melon.

ONION

Smut caused by Urocystis cepulae.

Massachusetts: "About the usual amount of smut this year. We have found from 1 to 25% infection; most fields, however, are free from this disease." A.V.O.

New York, Orange County: (Reported by E. W. Olive, June 18-21.) Dr. E. W. Olive of the Brooklyn Botanic Garden has recently spent several days in the Walkill Valley onion section of Orange County, New York, where he has been making observations on the prevalence of onion smut. He has found the disease to be unusually severe this year. Numerous counts were made in 23 fields and the percentage of smutted plants as arrived at by Dr. Olive are here given,- 32, 53, 83, 46, 39, 61, 28, 84, 0, 0, 4, 0, 0, 60, 45, 35, 34, 49, 34, 15, 38, 35, 8. In general it is believed that the number of smutted plants in this section will average about 50%. The extent of injury to the onion plants is variable; many seedlings are killed outright, others are much stunted, while still others, although showing more or less smut at the base of the outer leaves and sheaths, will possibly make a fair growth. Many of the fields that are thinly sown will hardly make a crop, others that are thickly sown look much more promising for although many plants may be destroyed by the smut there will still be enough left to make a fair crop. Some growers deliberately plant large amounts of seed per acre in order to offset loss from this disease.

Experiments on one farm where the soil was treated with formaldehyde were successful in controlling the disease. Plots which were treated with one pint of formaldehyde to 16 gallons of water applied at the rate of about 250 gallons per acre showed in several counts from 1 to 7% smut. The check rows, untreated, showed 28 to 38% smut. This experiment was run with five sets of three treated rows alternating with five sets of untreated rows in a block of thirty rows. Each of the rows was about 150 feet long. Plots treated with a stronger solution, one pint of formaldehyde to 10 gallons of water at the rate of 200 gallons per acre showed an average of about 1% smut. Other onions near by showed in two counts 53 and 83% diseased plants.

In estimating percentages Dr. Olive chose what seemed to him to be the quickest and simplest method. One hundred successive onion plants were counted in a row, the smutted plants were then removed and the percentage obtained directly. These counts were made in several representative portions of the field. It is the custom of many of the growers to pull out many of the dwarfed and smutted seedlings during the process of weeding. This must be taken into account when estimating the amount of disease.

Soft Rot probably caused by Bacillus carotovorus.

California: (Market inspection at New York and Chicago, 2 cars.) In one car 2% complete decay was noted, 8% involving 2 outer scales; 15% infection in the other car.

Texas: (Market inspection at Chicago, Kansas City and New York, 7 cars.) Average infection 24%, decay ranging from slight infection of 1 or 2 outer scales to 10% of onions completely decayed.

Black Mold caused by Aspergillus niger.

California: (Market inspection at Chicago, 1 car.) Black mold infection 7%.

Texas: (Market inspection at Boston, Chicago, Kansas City and New York, 10 cars.) Inspection of 3 cars at Boston revealed the presence of 10, 22 and 25% of black mold in outer scales and affecting appearance only. Average

infection in cars examined at Chicago 18%, ranging from small spots to entire surface of onion. In car inspected at New York 60% of onions were noticeably affected by black mold.

Neck Rot caused by Botrytis sp.

Texas: (Market inspection at Boston and Kansas City, 2 cars.) Neck rot infection for the 2 cars 2 and 4% respectively.

PEA

Root Rot caused by Fusarium sp.

Massachusetts: A Fusarium root and stem rot is reported from all parts of the state. Many small growers state that their entire crop is diseased and will not mature.

New York: That root rot is widespread and doing some damage in New York is shown by the fact that it has been reported from fifteen counties, four of which grow peas in quantity for canning. The information was obtained in response to a special questionnaire sent out by Dr. Chupp who is in direct charge of the survey in the state. Fourteen reporters gave estimates of loss ranging from a trace to 25%, the average being 8%. Twenty-six correspondents reported that no root rot had been seen.

Bacterial Stem Blight caused by Bacterium pisi.

(Sackett, W. G. A bacterial stem blight of field and garden peas. Col. Agr. Exp. Sta. Bul. 218: 1-42, 1916.)

Montana: (Reported by H. M. Jennison, July 9.) Disease general and high percentage of plants infected around Bozeman. The loss in yield, however, will not be over 1%. Infection much more severe in vines exposed to a driving rain storm which occurred some days ago.

PEACH

Brown Rot caused by Sclerotinia cinerea.

Alabama: (Market inspection at Chicago, 100 6-basket crates.) Brown rot infection 4%.

Florida: (Market inspection at Pittsburgh, 1 car.) Occasional brown rot noted.

Georgia: (Market inspection at Boston and New York, 5 cars.) Average brown rot infection 5%. Varieties affected Carmen, Hiley and Belle of Georgia.

Missouri: (Market inspection at Indianapolis, 1 car.) Ten percent of stock affected, Hiley and Belle varieties.

Black Mold caused by Rhizopus sp.

Florida: (Market inspection at Pittsburgh, 1 car.) All crates in top tier showing from 1 to 6 peaches per basket decayed by black mold.

Georgia: (Market inspection at Pittsburgh, 1 car.) An occasional peach decayed from black mold associated with brown rot.

POTATO

Scab caused by Actinomyces chromogenus.

Arkansas: (Market inspection at Kansas City, 1 car.) Bad scab noted on an occasional potato.

Florida: (Market inspection at Boston, Chicago, Kansas City and Pittsburgh, 10 cars and 205 sacks.) Average infection from scab 9%, extending in many cases one-fourth inch into tuber affected and covering from one-fourth to one-half of surface.

Louisiana: (Market inspection at Chicago, Kansas City and St. Louis, 8 cars.) In most cars scab infection was deep, extending one-fourth inch into tuber. Average for cars 9%.

Mississippi: (Market inspection at Chicago, Kansas City and Memphis, 4 cars.) Half of scab slight, the balance deep and extending into tuber at least one-fourth inch, affecting from one-fourth to one-third of tuber. Average infection 8%.

North Carolina: (Market inspection at Boston, 1 car.) Six percent infection, 4% of which was bad, 2% slight, some barrels containing as high as 20% scab.

Texas: (Market inspection at Chicago, Detroit, Kansas City and St. Louis, 19 cars.) Scab in most cars extending one-fourth inch into tuber and covering from one-fourth to one-third of surface. Average infection 15%. One car showed 66% infection.

Virginia: (Market inspection at Boston, 200 barrels.) Infection 15%, of which two-thirds covered one-fourth of tuber, balance slight. Some barrels showed as high as 50% infection.

Late Blight caused by Phytophthora infestans.

Florida: (Market inspection at Boston and Pittsburgh, 5 cars.) Average infection 12%, 1 car showing as high as 40% late blight.

Georgia: (Market inspection at New York, 1 car.) Late blight noted on 2% of tubers, causing loss of one-fourth of each tuber.

New Jersey: Dr. Mel T. Cook reports in a letter dated July 15 that specimens of late blight have been received from Monmouth County where the disease is said to be widely distributed and doing some damage.

North Carolina: (Market inspection at Pittsburgh, 2 cars.) Infection in the two cars 10 and 25% respectively.

Rot caused by Fusarium sp.

Florida: (Market inspection at Boston and Chicago, 3 cars.) Tuber rot noted in three cars, infection about 4%.

Georgia: (Market inspection at Boston and Chicago, 2 cars.) Fusarium rot noted mostly in white stock, 10% infection for both cars.

Louisiana: (Market inspection at Chicago and St. Louis, 3 cars.) Dry rot found in all sacks in one car, the other two cars showing 2 and 16% Fusarium rot of wet type.

Mississippi: (Market inspection at Chicago, 1 car.) Tuber rot of wet type 5%, some sacks with as high as 50% infection.

North Carolina: (Market inspection at Boston, 1 car.) Five percent of tubers totally decayed.

Texas: (Market inspection at Chicago, 7 cars.) Average infection 6%.

Rots (Bacterial)

Arkansas: (Market inspection at Kansas City, 3 cars.) Average decay 15%, probably due to organisms of the Bacillus carotovorus type.

Florida: (Market inspection at Boston, Chicago, Detroit, Kansas City, New York, Philadelphia and Pittsburgh, 21 cars and 264 sacks.) In the twenty-one cars inspected slimy soft rot in all stages was noted, in some cases sacks being totally destroyed. Average infection 10 to 20%.

Inspection of two cars at Boston showed 1 and 2% brown rot infection probably caused by Bacillus solanacearum.

Georgia: (Market inspection at Boston, Detroit, Kansas City, New York and Pittsburgh, 7 cars.) Average decay, probably caused by Bacillus carotovorus, about 14%. Some cars carried sacks and barrels that contained so much decay as to render the potatoes worthless.

Louisiana: (Market inspection at Boston, Chicago, Cincinnati, Detroit, Kansas City and Omaha, 8 cars.) In one car inspected at Kansas City about 8% infection from brown rot, probably caused by Bacillus solanacearum, was found.

In the other seven cars slimy soft rot was noted in all stages. Average infection 20%.

Mississippi: (Market inspection at Kansas City, 1 car.) Nine percent slimy soft rot was noted, of which 5% was bad, 4% slight.

North Carolina: (Market inspection at Pittsburgh, 2 cars.) Infection from bacterial soft rot 4 and 15% respectively, ranging from very slight up to 60%, with some sacks worthless.

South Carolina: (Market inspection at Boston, Detroit, New York and Pittsburgh, 6 cars.) Bacterial decay, probably due to Bacillus carotovorus. was found in all cars inspected at the above named markets, an average of 5% being found in three cars inspected at Boston and Pittsburgh, and 35% infection in the three cars inspected at Detroit and New York. In the latter cars decay ranged from 5 to 75%.

Tennessee: (Market inspection at Chicago, 1 car.) About one-fourth of sacks of potatoes were 20% badly decayed by slimy soft rot, the rest of the car showing about 4% infection. Bacteria of the Bacillus carotovorus type probably caused this trouble.

Texas: (Market inspection at Detroit and Kansas City, 8 cars and 256 sacks.) Average slimy soft rot infection 12%, most of which was bad.

Virginia: (Market inspection at Pittsburgh, 5 cars.) Bacterial decay in four cars 3%, one car showing 35% of tubers more than half decayed.

SPINACH

Soft Rot probably caused by Bacillus carotovorus.

Missouri: (Market inspection at Pittsburgh, 1 car.) Practically 100% waste from this decay.

TOMATO

Phoma Rot caused by Phoma destructiva.

Florida: (Market inspection at Boston, Jacksonville, Kansas City and Pittsburgh, 18 cars.) Twelve percent infection, occurring mostly in spots about the size of a dime, from 1 to 6 spots on each tomato affected.

Mississippi: (Market inspection at Cincinnati, 1 car.) Five percent of stock showing Phoma rot.

Early Blight caused by Alternaria solani.

Florida: (Market inspection at Boston, Jacksonville, Kansas City and Pittsburgh, 18 cars.) Average infection 18%. Nailhead spots ranging from an occasional tomato with small spots to 40% of contents of car showing both heavy and light infection.

Soft Rot caused by Rhizopus nigricans.

Florida: (Market inspection at Pittsburgh, 13 cars.) Rhizopus ranging from 3 to 34%, average 12%, in all cars affected specimens being completely decayed.

Texas: (Market inspection at Chicago, 1 car.) Four percent infection.

Soil Rot caused by Rhizoctonia solani.

Florida: (Market inspection at Kansas City, 2 cars.) Soil rot in two cars 3 and 20% respectively.

Buckeye Rot caused by Phytophthora terrestria.

Florida: (Market inspection at Boston, 1 car.) Three percent infection.

WATERMELON

Stem End Rot caused by Diplodia sp.

Florida: (Market inspection at Boston, Kansas City and Memphis, 3 cars.) Infection in the three cars 12, 13 and 58% respectively, in the latter car 20% of melons being completely decayed from this disease.

Georgia: (Market inspection at Memphis and St. Louis, 3 cars.) Decay varied from an occasional melon affected in one car to 50 and 100% showing stem end rot in the other two cars.

South Carolina: (Market inspection at Dallas, 1 car.) Forty percent of melons badly decayed from stem end rot and other soft rots.

Anthracnose caused by Colletotrichum lagenarium.

Georgia: (Market inspection at Memphis and St. Louis, 2 cars.) In one car half of melons with anthracnose ranging from several small spots to ridges covering up to one-third of surface of melon. Slight disease developing in the other car.

South Carolina: (Market inspection at Dallas, 1 car.) All melons badly spotted with anthracnose, the spots ranging from one-half to one inch in diameter and covering from two-thirds to entire surface of melon.

WHEAT

Bunt caused by Tilletia laevis and T. tritici.

Arkansas: "Wheat is showing a high infection of bunt in the northwestern part of the state. Infection in commercial fields being from 5 to 20%."- J.A.E.

Georgia: Untreated seed is showing from 5 to 25% bunt in many places. Several fields in Jackson County ran about 15% bunt.

Maryland: (Reported by A. A. Potter.) Tilletia laevis noted on trip from Washington to Baltimore and Ridgeville. Slight amounts were also observed between Washington and Annapolis.

Virginia: Not so widespread as loose smut but where found is usually more destructive; as much as 25% in some fields. Will probably not average more than 3% over the state.

Loose Smut caused by Ustilago tritici.

Arkansas: Disease present, ranging from 1 to 3%.

Georgia: Found quite generally over the state but not so important as bunt; probably not more than 5% loss for the entire state.

Maryland: (Reported by A. A. Potter.) Disease very general in its occurrence. Observed in the central portion of the state, causing a loss as high as 10%. It is estimated that the average loss will be 2 to 3% for that portion of the state. On a trip from Washington to Annapolis a number of fields were seen with an average of 5% loose smut.

Ohio: (Reported by W. G. Stover.) In the southern half of the state considerable loose smut has been found, more than was expected. Some fields have as high as 25% of the heads destroyed by this smut. Many fields have from 8 to 15%, while of course some have only a very slight amount.

Oklahoma: "Reports have been received from many of the principal wheat growing counties and the losses vary from 1/10 to 2%, while in some cases only a trace. About Stillwater the smut was present in every field visited, ranging from 1 to 4%. I believe that I can say that the disease was less prevalent than the two previous years." -- C.D.L.

Tennessee: Very little damage.

Virginia: Fields without a trace are hard to find, 2 to 3% is the common amount found but occasionally 10 to 15%. The amount for the state may average 15%.

West Virginia: Disease more prevalent than bunt. Many fields were found showing as high as 10%. We estimated 5 to 7% for the eastern part of the state.

Scab caused by Fusarium culmorum.

Georgia: Not especially severe in the state. A trace of the disease has been observed on the experimental plots at Athens.

New Jersey: Common and in some cases severe.

Ohio: (Reported by W. G. Stover.) A great deal of scab in the southern part of the state. A good many fields have from 10 to 30% of the heads affected and some fields show as high as 75%. Usually only a few spikelets in the head are diseased but sometimes the whole head or the whole upper half of the head may be badly injured.

Oklahoma: Not reported so far this year.

Tennessee: "This disease has been by far the most important. Damage as high as 50% is claimed for some sections in eastern Tennessee while in the middle section it is probably 10 to 25%. In western Tennessee there was very little damage, probably because of the fact that the rainfall was lighter in the western portion than in other sections." -- S.H.E.

Virginia: Scab unusually severe in southwestern Virginia where excessive rainfall occurred during heading. First reported June 15 from Pulaski. Probably 50 to 75% of the fields in the southwestern section are infected. A general average for the state would probably be about 1 to 2% reduction in yield. In a number of counties reports indicate that the yield will not be more than 50 to 75% of a full crop.

In Pulaski County notes were taken in sixteen fields, comprising 285 acres. Eleven of these fields were infected with scab, the reduction in yield being from 1 to 15% with an average of 5.5%.

West Virginia: "Scab is more prevalent than we have ever noted previously, the percentage of diseased heads being in some cases far above 50. The damage appears particularly in the Ohio Valley. The early spring weather in this section was quite moist but it has been very dry for nearly three weeks." N. J. G.

Leaf Rust caused by Puccinia triticina.

Leaf rust is most abundant, as usual, east of the Mississippi River. It has been reported by collaborators and field scouts of the Plant Disease Survey as being especially severe in the states of Tennessee, Kentucky, West Virginia and Ohio, where the disease is said to be present in practically every field and affecting most of the plants to extent of 60 or 70%, according to standard scale. It is abundant in the wheat growing sections of Arkansas, Alabama, Georgia, South Carolina, North Carolina, Virginia, Maryland, Indiana and Pennsylvania. In these states most of the plants were affected but the degree of infection was lower than in the four states above mentioned. In the remainder of the winter wheat belt leaf rust is not reported as being especially abundant.

Stem Rust caused by Puccinia graminis.

Georgia: Stem rust made its first appearance about April 15.

Ohio: (Reported by W. G. Stover, June 26.) "In Clinton and Green Counties we have been finding considerable black stem rust. Some fields are so badly rusted that the owner may not cut them. Dry weather is probably in part responsible for their condition but anyone can see by looking at them that the rust is the prime factor."

Virginia: Stem rust sporadic. Heavy infection in a few fields, but usually negligible.

Black Chaff

Dr. Erwin F. Smith furnishes the following note on the new bacterial disease of wheat:

"In 1917 three men were sent into the Middle West with instructions to examine as many wheat fields as possible and to send in any suspicious samples. Wheats were also received from other wheat growing states, east and west, and from the Canadian provinces. All of these samples were critically examined in the laboratory. The

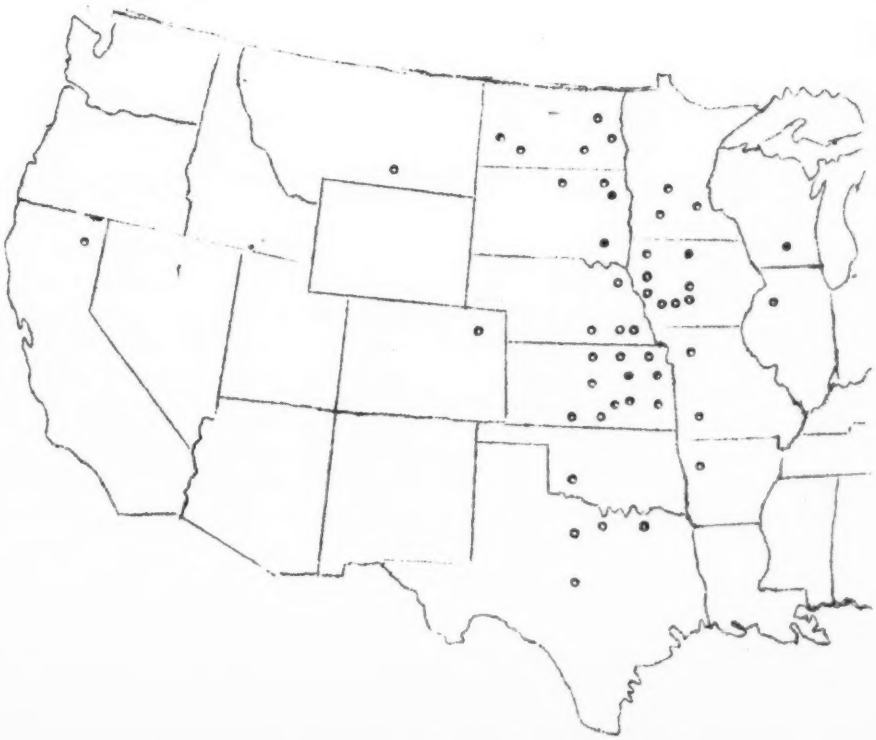

Fig. 3 Map showing occurrence of Black Chaff disease of wheat, season of 1917. 645 samples were examined and disease found on 137.

disease was found to be most prevalent in Kansas, but was discovered in all of the great wheat states of the Middle West as shown on the map, the remoter localities in most cases representing slight infections in single fields. Everything sent in to us was not only inspected under the hand lens and under the compound microscope, but also in most cases plates were poured and inoculations were undertaken in order to leave no doubt as to the correctness of our determinations. The organism is a polar-flagellate, yellow Schizomycete, closely like the one described from barley last year by Jones, Johnson, and Reddy. It forms characteristic surface colonies on agar and on gelatin.

Explorations of this season are adding still further to our knowledge of its distribution but it has not yet been received from states east of Illinois. The disease acts like one recently introduced and from its ready distribution on the kernel and its continued multiplication in the leaves throughout the growing season it is one greatly to be feared, especially in moist locations and in years of abundant rainfall. The reduction in yield from destruction of leaves must often be very considerable even when the heads are not attacked. Wheat should not be imported into other states for planting from states where the disease is now prevalent, especially not from Kansas and Iowa unless a clean bill of health can be obtained. The Kansas Kanred wheat (rust resistant) is much subject to it. It attacks both spring and winter wheat. The fields present a brownish hue as they approach maturity.

Experiments indicate that it is a disease which will yield to a combination of good screening (to remove the shrivelled kernels which contain the bacterial cavities) and germicidal treatment of the seed grain to destroy the surface bacteria, since the organism is much more sensitive to dilute solutions of copper sulphate than is the wheat kernel itself.

The wheat kernel, if subsequently plumped for a moment into milk of lime and dried rapidly (1/2 hour in our experiments), stands a 20-minute exposure to $CuSO_4$ water (1:1000) without injury to germination (it is stimulated a little), and probably exposure for half that time to half strength CuSO would be sufficient, i.e., 10 minutes in 1:2000 CuSO water followed a moment by milk of lime and then by rapid drying. In our experiments 10-minutes exposure to 1:1000 CuSO followed by lime did not have any perceptible effect on germination.

States and counties in which the bacterial black chaff was found in 1917:

California: Modoc; Montana: Yellowstone; Colorado: Washington; Texas: Tarrant, Collin, San Saba, Wise; Oklahoma: Washita; Arkansas: Washington; Missouri: Greene, Livingston; Kansas: Mitchell; Cloud, Ottawa, Riley, Shawnee, Saline, Pottawattomie, Wabaunsee, Greenwood, McPherson, Harvey, Barber, Sumner; Nebraska: Pawnee, Dodge, Gage, Richardson; Iowa: Plymouth, Woodbury, Harrison, Pottawattamie, Mills, Story, Adams, Montgomery, Warren; Illinois: Knox, slight; Wisconsin: Madison (at Experiment Station on wheat imported from Kansas); Minnesota: McLeod, Stearns, Anoka; South Dakota: Union, Brown, Grant, Roberts; North Dakota: Starke, Morton, Cass, Ranson, Grand Forks."